

WHAT IS CLAIMED IS:

1. A liquid crystal driving device generating gate-on/off signals to drive liquid crystal, the liquid crystal driving device comprising:

a sequence recognition means for recognizing sequence of a pertinent gate driver IC by a pulse width of a vertical start signal inputted in synchronization with a vertical synchronous signal, and generating a Carry signal and 10 location data of the pertinent gate driver IC; and

a gate-off voltage generation means for receiving a first gate-off voltage and the location data of the pertinent gate driver IC, and outputting a second gate-off voltage which is generated by subtracting a voltage attenuation 15 quantity corresponding to the location data of the gate driver IC from the first gate-off voltage.

2. A liquid crystal driving device as claimed in claim 1, wherein the sequence recognition means comprises:

20 an m-bit counter for estimating a pulse width of the vertical start signal inputted in synchronization with the vertical synchronous signal, and generating location data of the pertinent gate driver IC; and

a carry signal generation unit for generating a Carry

signal that a vertical start signal thereof has a pulse width changed on the basis of a value of location data of the pertinent gate driver IC.

5 3. A liquid crystal driving device as claimed in claim 1, wherein the Carry signal is provided to the next gate driver IC so as to be used as a vertical start signal.

10 4. A liquid crystal driving device as claimed in claim 1, wherein the gate-off voltage generation means receives at least one state signal.

15 5. A liquid crystal driving device as claimed in claim 4, wherein the at least one state signal is determined according to resolution, size of a liquid crystal panel, and characteristic of a signal line pattern.

20 6. A liquid crystal driving device as claimed in claim 4, wherein the gate-off voltage generation means subtracts voltage attenuation quantity corresponding to location data of the gate driver IC from an inputted gate-off voltage, and adds a compensation value corresponding to one of the at least one state signal to the subtracted gate-off voltage, thereby generating the second gate-off voltage.

7. A liquid crystal driving device comprising:
 - a liquid crystal panel including a plurality of signal line patterns to apply a data signal;
 - 5 a look-up table for storing a plurality of reference data corresponding to the number of gate driver ICs;
 - a reference data generation section for selecting and outputting one of the plurality of reference data;
 - 10 a boosting section for boosting signal level of input data by adding the selected reference data to the input data, and outputting the boosted input data to the plurality of signal line patterns;
 - 15 a count section for generating a count value by counting the number of transitional edges of a vertical synchronous signal; and
 - a control section for calculating a plurality of parameter values on the basis of the number of gate driver ICs and the number of gate lines, comparing the count value counted by the count section with the calculated parameter values, and controlling the reference data generation section to select and output one of the plurality of reference data with reference to the look-up table according to a result of the comparison.

8. A liquid crystal driving device as claimed in claim 7, wherein the plurality of reference data are determined according to the number of the gate driver ICs, the number of gate lines, size and resolution of the liquid crystal panel, 5 and frame frequency.

9. A liquid crystal driving device as claimed in claim 7, wherein the parameter values are determined as values obtained by giving different weight values to each division 10 value obtained by dividing the number of gate lines by the number of gate drivers.

10. A liquid crystal driving method comprising the steps of:

15 generating a count value by counting gate clock signals; calculating a plurality of parameter values on the basis of the number of gate driver ICs and the number of gate lines;

comparing the count value with the parameter values;

20 selecting one of a plurality of reference data, corresponding to the number of gate driver ICs with reference to a look-up table according to a result of the comparison step;

boosting signal level of input data by adding the input

data to the selected reference data; and

outputting the boosted data to a signal line pattern for applying data signal.

5 11. A liquid crystal driving method as claimed in claim 10, wherein the plurality of reference data are determined according to the number of the gate driver ICs, the number of gate lines, size of a liquid crystal panel, resolution, and frame frequency.

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12. A liquid crystal driving method as claimed in claim 10, wherein the predetermined parameter values is values obtained by giving different weight values to each division value obtained by dividing the number of gate lines by the 15 number of gate drivers.

13. A liquid crystal driving device comprising:
a sequence recognition means for recognizing sequence of a pertinent gate driver IC by a pulse width of a vertical 20 start signal inputted in synchronization with a vertical synchronous signal, and generating a Carry signal and location data of the pertinent gate driver IC;

a gate-off voltage generation means for receiving a first gate-off voltage and the location data of the pertinent

gate driver IC, and outputting a second gate-off voltage which is generated by subtracting a voltage attenuation quantity corresponding to the location data of the gate driver IC from the first gate-off voltage;

5 a liquid crystal panel including a plurality of signal line patterns to apply a data signal;

a look-up table for storing a plurality of reference data corresponding to the number of gate driver ICs;

10 a reference data generation section for selecting and outputting one of the plurality of reference data;

a boosting section for boosting signal level of input data by adding the selected reference data to the input data, and outputting the boosted input data to the plurality of signal line patterns;

15 a count section for generating a count value by counting the number of transitional edges of a vertical synchronous signal; and

a control section for calculating a plurality of parameter values on the basis of the number of gate driver ICs and the number of gate lines, comparing the count value counted by the count section with the calculated parameter values, and controlling the reference data generation section to select and output one of the plurality of reference data with reference to the look-up table according to a result of

the comparison.

14. A liquid crystal driving device as claimed in claim 13, wherein the sequence recognition means comprises:

5 an m-bit counter for estimating a pulse width of the vertical start signal inputted in synchronization with the vertical synchronous signal, and generating location data of the pertinent gate driver IC; and

10 a carry signal generation unit for generating a Carry signal that a vertical start signal thereof has a pulse width changed on the basis of a value of location data of the pertinent gate driver IC.

15 13, wherein the Carry signal is provided to the next gate driver IC so as to be used as a vertical start signal.

16. A liquid crystal driving device as claimed in claim 13, wherein the gate-off voltage generation means receives at 20 least one state signal.

17. A liquid crystal driving device as claimed in claim 16, wherein the at least one state signal is determined according to resolution, size of a liquid crystal panel, and

characteristic of a signal line pattern.

18. A liquid crystal driving device as claimed in claim
16, wherein the gate-off voltage generation means subtracts
5 voltage attenuation quantity corresponding to location data
of the gate driver IC from an inputted gate-off voltage, and
adds a compensation value corresponding to one of the at
least one state signal to the subtracted gate-off voltage,
thereby generating the second gate-off voltage.

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19. A liquid crystal driving device as claimed in claim
13, wherein the plurality of reference data are determined
according to the number of the gate driver ICs, the number of
gate lines, size and resolution of the liquid crystal panel,
15 and frame frequency.

20. A liquid crystal driving device as claimed in claim
13, wherein the parameter values are determined as values
obtained by giving different weight values to each division
20 value obtained by dividing the number of gate lines by the
number of gate drivers.